BURROWING BEHAVIOUR IN ADULT *CARDIOPHORUS CARDISCE* (SAY) (COLEOPTERA: ELATERIDAE)

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Abstract

Burrows excavated in the slopes of sand dunes by adult *Cardiophorus cardisce* (Say) in Canada are reported and described, apparently, for the first time.

While collecting on sand dunes in Pinery Provincial Park (Grand Bend, Ontario, Canada), I discovered numerous individuals of *Cardiophorus cardisce* (Say) flying and running about very actively. A short time later, I noticed little piles of sand being pushed out of a burrow dug in the slope of a large dune. As I watched, I saw a beetle emerge from the burrow, hind end first, pushing a small pile of sand out behind it. This specimen was later identified as *C. cardisce*. This little beetle then rushed headlong back into the burrow and re-emerged a few seconds later with another load of sand.

This behaviour struck me as being unusual and after having captured this specimen, I continued to look for similar burrows. I discovered several burrows in various stages of construction, each with a single specimen of this species inside. I also observed several individuals which at first appeared to be attempting to run up the sides of the dunes. I soon realized that their frantic movements were not of insects trying to run on loose sand but were individuals attempting to start excavations of burrows.

These burrows were always found in association with dune grasses on the slopes of dunes and never in flat, exposed areas. They extended about 6-8 cm. horizontally into the slopes of the dunes to where the sand was moist. Presumably, if the dunes were drier the burrows would have been extended accordingly.

The burrows were excavated in dog-like fashion, one leg after another (fore legs only) in the same way that many sphecid wasps dig. The openings of the burrows were semi-circular in shape with the flat side forming the floor. The excavated sand was never carried away or spread in any manner; it was simply pushed free of the opening and left.

The vast majority of the specimens collected were males. This might lead one to suspect that perhaps only males dig burrows. This is probably untrue. It was early in May and very few insects of any kind were active. The site was near the shoreline of Lake Huron where ice had disappeared only a few weeks earlier. What I had witnessed, then, was probably the first emergence of this species, and it is also probable that the males emerge before the females.

The purpose of the burrows appears to be for protection against heat and water loss. Even though the air was cold, the sand surface and the layer of air immediately above was very hot and dry. Further evidence for this was the fact that I found exposed beetles only in the morning and again in the

early evening. This burrowing appears to be another example of convergent evolution in the behaviour of sand-associated insects.

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